

CURRENT POSITION

Assistant Professor
DEEPEND Consortium Data Manager
Guy Harvey Research Institute
Department of Biological Sciences
Nova Southeastern University Halmos College of Natural Sciences and Oceanography

EDUCATION

2015 **Doctor of Philosophy:** Oceanography/Marine Biology, Nova Southeastern University
2011 **Master of Science:** Marine Biology, Nova Southeastern University
2002 **Bachelor of Science:** Information Systems, Linfield College

PUBLICATIONS

Peer-reviewed journals (reverse chrono):

** student publications

24. Timm LE, Isma L, **Johnston MW**, Bracken-Grissom, HD (2020) Comparative Population Genomics and Biophysical Modeling of Shrimp Migration in the Gulf of Mexico Reveals Current-Mediated Connectivity. *Frontiers in Marine Science*. 7, 19. <https://www.frontiersin.org/article/10.3389/fmars.2020.00019>
23. Boswell K, D'Elia M, **Johnston MW**, Mohan JA, Warren D, Wells RJD, Sutton T (2020) Oceanographic Structure and Light Levels Drive Patterns of Sound Scattering Layers in a Low-Latitude Oceanic System. *Frontiers in Marine Science* 7, 51. <https://www.frontiersin.org/article/10.3389/fmars.2020.00051>
22. Bernard AM, **Johnston MW**, Reichert MJ, Shivji MS (2019) Genetic and Biophysical Modeling Evidence of Generational Connectivity in the Intensively Exploited, Western North Atlantic Red Grouper (*Epinephelus morio*). *ICES Journal of Marine Science*. 77(1), 359-370 21. <https://academic.oup.com/icesjms/article/77/1/359/5614358>
21. Riegl B, **Johnston MW**, Glynn PW, Keith I, Rivera F, Vera-Zambrano M, Banks S, Glynn PJ (2019) Some environmental and biological determinants of coral richness, resilience and reef building in Galápagos (Ecuador). *Nature Scientific Reports* 9(1), 10322. <https://www.nature.com/articles/s41598-019-46607-9>
20. Byrne ME, Wetherbee BM, Vaudo J, **Johnston MW**, Harvey GM, Shivji MS (2019) Behavioral Response of a Mobile Marine Predator to Environmental Variables Differs Across Ecoregions. *Ecography*. 42: 1569-1578 <https://onlinelibrary.wiley.com/doi/pdf/10.1111/ecog.04463>
19. **Johnston MW**, Milligan RJ, Easson CG, de Rada S, English D, Penta B, Sutton TT (2019) An Empirically-validated Method for Characterizing Pelagic Habitats in the Gulf of Mexico Using Ocean Model Data. *Limnology and Oceanography Methods* 17(6), 363-375.
18. **Johnston MW**, Larsson AI (2019) 40 Perspectives of Biophysical Modelling with Implications on Biological Connectivity of Mediterranean Cold-Water Corals. In: Orejas C., Jiménez C. (eds) *Mediterranean Cold-Water Corals: Past, Present and Future*. Coral Reefs of the World, vol 9. Springer, Cham
17. Riegl B, **Johnston MW**, Bauman A, Howells E, Burt J, Purkis S, Sheppard CRC (2018) Population collapse dynamics in *Acropora downingi*, an Arabian/Persian Gulf ecosystem-engineering coral, linked to rising temperature. *Global Change Biology* 24(6), 2447-2462.
16. Sylvain P, **Johnston MW**, Vaissière AC, Bergerd F, Jacoba C, Dodge R (2017) An update of the Visual_HEA software to improve the implementation of the Habitat Equivalency Analysis method. *Ecological Engineering* 105 276-283.
15. O'Brien CM**, **Johnston MW**, Kerstetter D (2017) Ports and Pests: Assessing the Threat of Aquatic Invasive Species Introduced by Maritime Shipping Activity in Cuba. *Marine Pollution Bulletin*, 125(1-2), 92-102.
14. **Johnston MW**, Bernard AM (2017) A bank divided: quantifying a spatial and temporal connectivity break between the Campeche Bank and the north-eastern Gulf of Mexico. *Marine Biology* 164(1), 1-15.
13. **Johnston MW**, Bernard AM, Shivji MS (2017) Forecasting lionfish sources and sinks in the Atlantic: Are Gulf of Mexico reef fisheries at risk? *Coral Reefs* 36, 169-181.
12. Purkis SJ, Gardiner R, **Johnston MW**, Sheppard CRC (2016) A half-century of coastline change in Diego Garcia – a strategically important atoll island in the Chagos. *Geomorphology* 261, 282-298.
11. **Johnston MW**, Akins, JL (2016) The Non-native royal damsel (*Neopomacentrus cyanomos*) in the southern Gulf of Mexico; an invasion risk? *Marine Biology* 163(1), 1-14.
10. **Johnston MW**, Purkis SJ (2016) Forecasting the success of invasive marine species; lessons learned from purposeful reef fish releases in the Hawaiian Islands. *Fisheries Research* 176, 190-200.

9. **Johnston MW**, Purkis SJ, Dodge RE (2015) Measuring Bahamian lionfish impacts to marine ecological services using Habitat Equivalency Analysis. *Marine Biology* 162 (12), 2501-2512.
8. **Johnston MW**, Purkis SJ (2015) A coordinated and sustained international strategy is required to turn the tide on the Atlantic lionfish invasion. *Marine Ecology Progress Series*. 533:219-235 <http://dx.doi.org/10.3354/meps11399>
7. **Johnston MW**, Purkis SJ (2015) Hurricanes accelerated the Florida–Bahamas lionfish invasion. *Global Change Biology* 21, 2249–2260. <http://dx.doi.org/10.1111/gcb.12874>
6. **Johnston MW**, Purkis SJ (2014) Are lionfish set for a Mediterranean invasion? Modelling explains why this is unlikely to occur. *Mar. Pollut. Bull.* <http://dx.doi.org/10.1016/j.marpolbul.2014.09.013>
5. **Johnston MW**, Purkis SJ (2014) Lionfish in the eastern tropical and north Pacific; A cellular automaton approach to risk assessment. *Biological Invasions*. 1–15
4. GIGA Community of Scientists (2013) Global Invertebrate Genomics Alliance (GIGA): developing community resources to study diverse invertebrate genomes. *Journal of Heredity*. 2014:105(1):1–18
3. **Johnston MW**, Purkis SJ (2013) Modeling the potential spread of the recently identified non–native panther grouper (*Chromileptes altivelis*) in the Atlantic using a cellular automaton approach. *PloS one* 8.8 (2013): e73023.
2. **Johnston MW**, Purkis SJ (2012) Invasionsoft: A web–enabled tool for invasive species colonization predictions. *Aquatic Invasions* 7(3), 405–417.
1. **Johnston MW**, Purkis SJ (2011) Spatial analysis of the invasion of lionfish in the western Atlantic and Caribbean. *Marine Pollution Bulletin* 62 (6), 1218–1226.

Conference and poster presentations:

24. **Johnston MW**, Milligan RJ, Easson CG, English D, de Rada S, Penta B, Sutton TT (2018) DEEPEND: A Tool for Classification of Mesoscale Water mass Structure for Pelagic Community Analyses. 2018 Gulf of Mexico Oil Spill and Ecosystem Science Conference, New Orleans, Louisiana, USA.
23. **Johnston MW**, Milligan RJ, Easson CG, English D, de Rada S, Penta B, Sutton TT (2018) DEEPEND: A Tool for Classification of Mesoscale Water mass Structure for Pelagic Community Analyses. 2018 HCNSO Science Symposium, Dania Beach, Florida, USA.
22. **Johnston MW**, Milligan RJ, Easson CG, English D, de Rada S, Penta B, Sutton TT (2018) DEEPEND: A Tool for Classification of Mesoscale Water mass Structure for Pelagic Community Analyses. 2018 Ocean Sciences Meeting, Portland, Oregon, USA.
21. **Johnston MW**, Purkis SJ (2017) Hurricanes Accelerated the Florida–Bahamas Lionfish Invasion. 20th International Conference on Aquatic Invasive Species, Coral Springs, Florida, USA.
20. **Johnston MW**, Purkis SJ (2017) Hurricanes Accelerated the Florida–Bahamas Lionfish Invasion. 38th Meeting of the United States Coral Reef Task Force, Fort Lauderdale, Florida, USA.
19. **Johnston MW**, Purkis SJ (2017) Biophysical Modeling Suggests Hurricanes Accelerated the Florida–Bahamas Lionfish Invasion. American Fisheries Society 147th Annual Meeting, Tampa, Florida.
18. **Johnston MW**, Bernard AM (2017) Forecasting Lionfish Sources and Sinks in the Atlantic Using Biophysical Modeling. American Fisheries Society 147th Annual Meeting, Tampa, Florida.
17. deRada S, Penta B, Sutton T, **Johnston M**, Milligan R, Easson C, Cook A, Boswell K, Lembke C, English D, Hu C (2017) Physical-bio-optical modeling in the Gulf of Mexico: Analysis of water mass relationships to pelagic habitat. 2017 ASLO Ocean Sciences Meeting, Honolulu, Hawai'i.
16. Sutton T, Cook A, Boswell k, Bracken-Grissom H, deRada S, English D, Eytan R, Hu C, **Johnston M**, Judkins H, Lembke C, Lopez J, Moore J, Nizinski M, Penta B, Romero I, Rooker J, Shivji M, Vecchione M, Wells D, Youngbluth M, Fenolio D, Frank T (2017) Deep-pelagic research in the Gulf of Mexico: The DEEPEND Consortium. 2017 ASLO Ocean Sciences Meeting, Honolulu, Hawai'i.
15. **Johnston MW**, Milligan RJ, Easson CG, de Rada S, Penta B, Sutton T (2017) DEEPEND: Characterizing Pelagic Habitats in the Gulf of Mexico Using Model, Empirical, and Remotely-Sensed Data. Gulf of Mexico Oil Spill and Ecosystem Science Conference, New Orleans, Louisiana, USA
14. deRada S, Penta B, **Johnston MW**, Milligan RJ, Easson CG, Sutton T (2017) DEEPEND: Relating Pelagic Habitat to Ocean Stratification. Gulf of Mexico Oil Spill and Ecosystem Science Conference, New Orleans, Louisiana, USA
13. **Johnston MW**, Bernard AM, Shivji MS (2016) Genetic and Biophysical Modeling Assessment of Red Grouper (*Epinephelus Morio*) Connectivity in the Gulf of Mexico and Southeastern USA. 69th Annual Gulf and Caribbean Fisheries Institute Conference, Grand Cayman, Cayman Islands.
12. **Johnston MW**, Bernard AM, Shivji MS (2016) Lionfish sources and sinks in the Atlantic: are reef fisheries in the Gulf of Mexico at risk? 69th Annual Gulf and Caribbean Fisheries Institute Conference, Grand Cayman, Cayman Islands.
11. **Johnston MW**, Bernard AM, Reichert MJ, Shivji MS (2016) Genetic and biophysical modeling assessment of connectivity in the red grouper, *Epinephelus Morio*. 13th International Coral Reef Symposium, Honolulu, HI, USA.
10. Cowen N, **Johnston MW** (2016) Monitoring a problem: evaluating the ecological status of the invasive Nile Monitor in Florida and forecasting population expansion using computational GIS. HCNSO Ocean Science Jamboree, Dania Beach, FL, USA.

9. **Johnston MW** (2016) A bank divided: quantifying the spatial-temporal connectivity break on the Campeche Bank. HCNSO Ocean Science Jamboree, Dania Beach, FL, USA.
8. O'Brien C, **Johnston MW** (2016) Port Mariel, Cuba: promise, prosperity, and pests. HCNSO Ocean Science Jamboree, Dania Beach, FL, USA.
7. deRada S, Penta B, **Johnston MW**, Sutton T (2016) A Gulf of Mexico comparative analysis of numerical model results, cruise-based observations, and historical data. Gulf of Mexico Oil Spill and Ecosystem Science Conference. Tampa, Florida, USA.
6. Sutton TT, **Johnston MW**, and 18 others (2015) Understanding deep–pelagic ecosystem variability in an age of increasing deep–ocean commercial activity: A Gulf of Mexico case study and new research initiative (DEEPEND). Deep–Sea Biology Symposium, Aveiro, Portugal.
5. Sutton TT, Cook AC, **Johnston MW**, and 17 others (2015) DEEPEND: Deep Pelagic Nekton Dynamics of the Gulf of Mexico. Deep–Sea Biology Symposium, Aveiro, Portugal.
4. Sutton TT, Cook AC, **Johnston MW**, and 17 others (2015) DEEPEND: Deep Pelagic Nekton Dynamics of the Gulf of Mexico. 2015 Joint Meeting of Ichthyologists and Herpetologists, Reno, Nevada, USA.
3. Sutton TT, Cook AC, **Johnston MW**, and 17 others (2015) DEEPEND: Deep Pelagic Nekton Dynamics of the Gulf of Mexico. Gulf of Mexico Oil Spill and Ecosystem Science Conference, Houston, TX
2. Lopez J, **Johnston MW** (2014) Establishing a “Global Invertebrate Genome Alliance” (GIGA) for comparative genomics. Society of Molecular Biology and Evolution Meeting
1. **Johnston MW**, Purkis SJ (2013) Lionfish in the eastern Pacific and Mediterranean – assessing the invasion risk with cellular automaton models. FWC Lionfish Summit Report

MANUSCRIPT REVIEWS

Scientific Reports; Coral Reefs; Marine Biology; Marine Ecology Progress Series; Marine Pollution Bulletin; Biological Invasions; Aquatic Invasions; Management of Biological Invasions; Peerj; Aquatic Biology

TEACHING

2018-present: Biology II (undergraduate), Intro to Cellular Biology (undergraduate)

2016-present: GIS and Remote Sensing (graduate)

2013-14: GIS and Remote Sensing – ArcGIS lab, web–based GIS programming (TA) (graduate)

GRADUATE STUDENTS

Primary Advisor:

*Cynthia Cleveland** – MS Marine Science – “Empirical validation and comparison of the Hybrid Coordinate Ocean Model (HYCOM) between the Gulf of Mexico and the Tongue of the Ocean”

*Noah Cowen** – MS Marine Biology – “Evaluating the ecological status of the introduced Nile monitor (*Varanus niloticus*) in Florida: Forecasting presence and population expansion using computation geographic information systems”

*Charleen O'Brien** – MS Marine Biology – “Ports, prosperity, and pests: assessing the threat of aquatic invasive species introduced by maritime shipping activity in Cuba”

*Stephanie Reilly** – MS Marine Biology – “Forecasting the spread and invasive potential of apple snails (*Pomacea spp.*) in Florida”

Committee Member:

*Jaime Ahn** – MS Marine Biology – “Geospatial analysis of NOAA cetacean stranding data in Florida to explore for human impacts”

*Ryan Brookbank** – MS Marine Biology – “Mapping the spatial–temporal variation in Ras Ghanadah seagrass meadows and sand shoals between 1996, 2006 & 2012”

Kayla Caldwell – MS Marine Biology – “Shifting Future of The Mangrove Population At Oleta River State Park Resulting From Climate Change Induced Sea Level Rise.

*Nicolas Jones** – MS Marine Biology – “Spatiotemporal Change in the Benthic Community of Southeast Florida”

*Adam Ritterman** – MS Marine Biology – “A review of present and alternative lionfish controls in the western Atlantic”

Liz Fromuth – MS Marine Biology – “Investigating the Temporal Dynamics and Stony Coral Community Assemblage of Dense *Acropora cervicornis* patches in Southeast Florida”

*Gaston Hayworth** – MS Marine Biology – “Salinity-Induced Barrier Layer impact on Rapid Intensification of Hurricanes (2000-2018) in the Atlantic Ocean”

Drew Mertzlufft – MS Marine Biology – “Pelagic Habitat Use by Benthic Fishes: Juvenile Scorpaenoids (Teleostei: Scorpaeniformes: Scorpaenidae, Sebastidae, and Setarchidae) of the Oceanic Gulf of Mexico”

*Deepesh Tourani** – MS Marine Biology – “Structure and Predictive Function of Microbial Communities from northern Gulf of Mexico”

* graduated

FUNDING

Grants/Contracts:

2020–24 NOAA RESTORE
2019 The Nature Conservancy
2015–20 The DEEPEND Consortium
2011–19 Guy Harvey Research Institute
2013 Global Invertebrate Genomics Alliance
2012 International Union for the Conservation of Nature
2011 Living Oceans Foundation
2011 Association L'OEil d'Andromède

Scholarships:

2014–15 Oceanographic Center Fishing Tournament Scholarship
2012–14 Oceanographic Center Scholarship

SPEAKING INVITATIONS

2019:

Saint Louis Science Center Summer Camp – Invited Guest Scientist – Skype interview with summer campers
NSU Computer OSTEM Summer Camp – Invited Speaker: “Computer modeling the connectivity patterns of marine organisms”

2018:

Broward College International Education – Invited Speaker: “Climate change effects on land and sea”
NSU Computer OSTEM Summer Camp – Invited Speaker: “Computer modeling the connectivity patterns of marine organisms”
NSU OSTEM Summer Camp – Invited Speaker: “Computer modeling the connectivity patterns of marine organisms”
NSU Faculty Lecture Series – Invited Speaker: “Visualizing your data to aid interpretation: more than pretty pictures”

2017:

REEF Monthly Seminar Series – Invited speaker: “Modelling the dispersal of non-native marine fish using three-dimensional computer simulation”
NSU Dive In! Lecture Series – Invited speaker: “Lionfish on Our Reefs: What Have We Learned 30 Years Post Introduction?”

2016:

Gear Up! Faculty Lecture Series – Invited speaker – ‘Data visualization in the marine sciences’
NSU OSTEM – Invited speaker – “Modeling marine invasive species”
NSU Ambassadors Board – Invited speaker – “Prowling lions and damsels causing distress: can computation help save our oceans from invasions?”

NSU – Faculty seminar – “Modelling generational connectivity of marine organisms using three-dimensional, Lagrangian computer simulation”

2015:

OceanTeacher Global Academy (OTGA) Research Data Management Conference – Guest lecturer – “DEEPEND data management and visualization”
U.S. Fish and Wildlife Service, Aquatic Nuisance Species Task Force – Invited speaker – “The Economics of invading lionfish”
NSU Mathematics Colloquium – Invited speaker – “Learning from lionfish: modeling marine invaded systems”
NSU OSTEM – Invited speaker – “Modeling marine invasive species”
Rosenstiel School of Marine and Atmospheric Science – Invited speaker – “Computer modeling the incursion patterns of marine invasive species”

2014:

NSU OSTEM – Invited speaker – “Web-based GIS and applications for modeling marine invasive species”
NSU – Invited speaker – “Learning from lionfish; modeling marine invasive species in the world’s oceans”

2013:

NSU OC Librarian Conference – Invited speaker – “The lion, the web, and the globe: web-based software

development and data visualization"

Oceangate Expedition Lionfish – Panel member – “Expedition Lionfish” symposium panel of experts
(<http://www.oceangate.com/expeditions/expedition-lionfish.html>)

PROGRAMMING AND TECHNICAL SUMMARY

- Visual Studio 2003–2012/VB.Net/.Net Framework 1.1–4.0
- ASP.Net,AJAX, Javascript, PHP, SVG, HTML
- SQL Server 2000–2016, SQL Server Management Studio (2005-2016)
- Object Oriented Analysis and Design
- Joomla 1.6/2.5/3.0
- ArcDesktop 9.2/10
- MatLab 2011b, 2014a
- R

WEBSITES/WEB APPLICATIONS

Guy Harvey Research Institute Shark tracking web application: <http://www.nova.edu/ocean/ghri/tracking/>

DEEPEND Consortium: <http://www.deependconsortium.org>

Professional Web Portal: <http://www.nova.edu/~johnmatt>

RELEVANT PROFESSIONAL EXPERIENCE

Nova Southeastern University, Halmos College of Natural Sciences and Oceanography Dania Beach, FL, USA Assistant Professor, DEEPEND Consortium Data Manager	3/11–Present
DJSP Processing Plantation, FL, USA Software Developer	9/08–10/10
Viewpoint Construction Software Portland, OR, USA Senior Software Developer	2/04–8/07